

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau



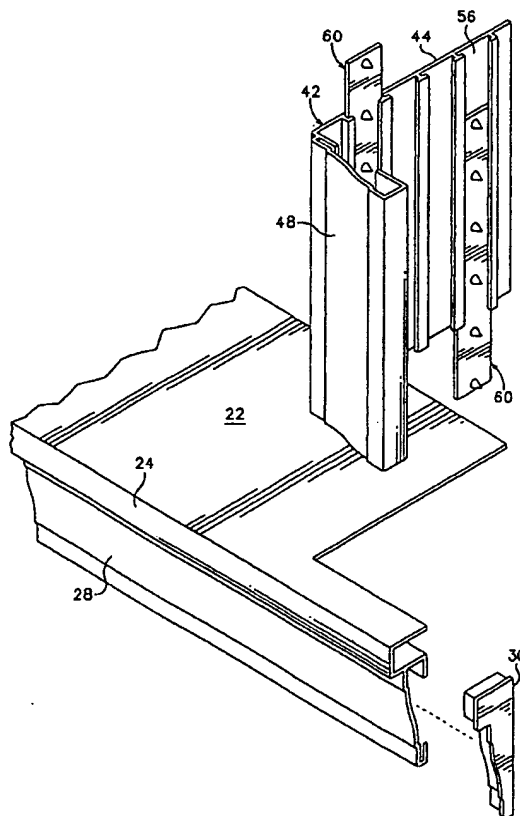
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : E06B 7/12		A1	(11) International Publication Number: WO 00/50724
			(43) International Publication Date: 31 August 2000 (31.08.00)
(21) International Application Number: PCT/US00/04199 (22) International Filing Date: 18 February 2000 (18.02.00) (30) Priority Data: 09/255,930 23 February 1999 (23.02.99) US (71)(72) Applicant and Inventor: ROBERTSON, Frederick, J. [US/US]; 17002 S.E. 16th Street, Vancouver, WA 98683 (US). (74) Agent: SMITH-HILL, John; Smith-Hill and Bedell, P.C., Suite 104, 12670 N.W. Barnes Road, Portland, OR 97229 (US).			(81) Designated States: AU, CA, NZ, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>

(54) Title: FINISH MATERIAL FOR WINDOW OPENINGS

(57) Abstract

A bottom sill finish material for a window opening is made of synthetic polymer material and has a return portion (22) which extends into the window opening, a sill projection (24) which extends from the return portion beyond vertical wall in which the window opening is formed, and a molding profile portion (28) which extends downward from the sill projection, substantially perpendicular to the return portion.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Larvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

FINISH MATERIAL FOR WINDOW OPENINGS

Background of the Invention

This invention relates to a finish material for window
5 openings.

In the building trade, it is conventional to build a wood frame wall using relatively rough lumber and finish the interior surface of the wall with gypsum wallboard (GWB). In the event that the wall has a window opening, a window frame
10 is installed with the inner face of the window frame offset outward from the interior of the wall. The return surfaces, which surrounding the window opening and are perpendicular to the interior of the wall, may be finished using either of two principal methods which are known in the building trade as
15 wood wrap and drywall or GWB wrap.

In accordance with the wood wrap technique, a wood sill is placed at the bottom of the window opening in the lower horizontal return portion and is attached to the framing lumber, typically by use of nails, and wood trim pieces are
20 installed in the vertical return portion of the window opening and in the upper horizontal return portion and are attached to the framing lumber. A molding profile is installed over the vertical wall face, typically by nailing to the exposed edges of the trim pieces, in order to conceal
25 the rough edge of the GWB around the opening.

The wood wrap technique is subject to disadvantage because wood is a high maintenance finish material. Nail holes must be filled after installation and a surface finish must be applied. Further, when the structure settles, a wood
30 sill may separate from the GWB on the interior surface of the wall, leaving unsightly cracks.

In accordance with the drywall wrap technique, GWB is attached to the upper and lower horizontal return portions and to the vertical return portions and suitable reinforcing
35 corner beading is installed to protect the corner transition between the vertical wall and the return surfaces bounding the window opening.

The drywall wrap technique is subject to disadvantage because GWB is not a tough material and therefore is not well suited to the type of stress that is applied to a bottom sill.

5 In construction of a frame wall, lumber that is nominally vertical might not in fact be vertical. Most of the time this is not a significant problem, because any error is not visible. However, if a stud at the edge of a window opening is used for alignment of finish material and it is
10 out-of-plumb, the finish material may itself be out-of-plumb, which could be objectionable.

It is possible to gauge the maximum departure of the sides of a window opening from vertical using a carpenter's level. The error is typically less than 1/4" over the height
15 of the window opening.

When a wood wrap is installed, it is usual to use shims to adjust the spacing between the vertical trim pieces and the studs at the vertical sides of the window opening so that the trim pieces are vertical. A similar technique is not
20 used in the drywall wrap technique and consequently there is a significant possibility that the nominally vertical sides of the window opening are not in fact vertical.

It is generally considered that the wood wrap trim technique provides a more attractive finish than the drywall
25 wrap technique. On the other hand, the drywall wrap does not require the services of an additional trade and can be installed at the same time as the GWB is installed over the vertical wall surfaces and therefore the drywall wrap is generally less expensive than wood wrap.

30

Summary of the Invention

According to a first aspect of the present invention there is provided a bottom sill finish material for a window opening which is formed in a vertical wall and has an
35 interior wrap of gypsum wallboard, said finish material being made of synthetic polymer material and having a return portion which extends into the window opening, a sill projection which extends from the return portion beyond the

vertical wall, and a molding profile portion which extends downward from the sill projection, substantially perpendicular to the return portion.

According to a second aspect of the present invention
5 there is provided a finish material for a window opening which is formed in a vertical wall and has an interior wrap of gypsum wallboard, said finish material comprising an extrusion of synthetic polymer material, the extrusion having a return portion which extends into the window opening and a
10 molding profile portion which is integral with the return portion and extends from the return portion over the vertical wall.

According to a third aspect of the present invention there is provided a method of finishing a window opening in a
15 vertical wall, the wall having an interior surface of gypsum wallboard and the window opening having an interior wrap of gypsum wallboard and having a bottom sill, the method comprising providing a length of bottom sill finish material made of synthetic polymer material and having a return
20 portion, a sill projection which extends from the return portion, and a molding profile portion which extends from the sill projection, substantially perpendicular to the return portion, placing the bottom sill finish material in the window opening so that the return portion extends into the
25 window opening and contacts the bottom sill of the window opening, the sill projection extends from the return portion beyond the vertical wall, and the molding profile portion extends downward from the sill projection in contact with the interior surface of the wall.

30 According to a third aspect of the present invention there is provided a new and ornamental profile for a finish material for a window opening.

Brief Description of the Drawings

35 For a better understanding of the invention, and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawings, in which

FIG. 1 illustrates a window opening that has been finished using finish material in accordance with the present invention,

FIG. 2 is a sectional view on the line 2-2 in FIG. 1,

5 FIG. 3 is a partial exploded view showing a first detail of the finish material shown in FIG. 1,

FIG. 4 is a cross sectional view of the bottom sill finish material shown in FIGS. 1 and 2,

10 FIG. 5 is a cross sectional view showing a modified form of the finish material shown in FIG. 4,

FIG. 6 is a cross sectional view of the side and top finish material shown in FIG. 1, and

FIG. 7 is a partial exploded view showing a second detail of the finish material shown in FIG. 1.

15

Detailed Description

FIGS. 1 and 2 illustrate a window frame 10 installed in a window opening of a wall that has been constructed using conventional wood frame techniques, employing lumber 12, exterior sheathing 14 and siding 16. The interior of the wall has been finished using GWB 18.

Referring to FIG. 2, the window opening has been finished using the conventional drywall wrap technique, in which GWB 20 has been installed in the vertical and horizontal portions of the return which surrounds the window opening. However, it is not necessary to install corner beading.

In accordance with one aspect of the invention, a bottom sill finish material is installed in the bottom sill of the window opening over the GWB wrap 20. The bottom sill finish material is a one piece extrusion of synthetic polymer material. Referring to FIGS. 3 and 4, the extrusion has a return portion 22, a sill projection 24, a flange 26, and a molding profile portion 28.

35 In order to install the bottom sill finish material shown in FIG. 3 and 4 in the window opening shown in FIG. 1, a suitable length of the finish material is cut, for example using a utility knife or shears. The length of the bottom

sill finish material will generally be several inches greater than the width of the opening as measured between the vertical returns of the GWB wrap 20. The return portion 22 is cut to a width such that the flange portion 26 can be placed firmly against the GWB 18 without interference from the return portion 22 engaging the window frame, and the length of the return portion is cut so that the return portion will fit snugly between the two vertical sides of the window opening. At each end, the finish material is preferably cut in step fashion, as shown in FIG. 3, so that the sill projection 24, the flange portion 26 and the molding profile portion 28 are somewhat longer than the return portion 22.

The bottom sill finish material is installed by using spray adhesive to bond the return portion 22 to the GWB wrap 20 at the bottom sill of the window opening and the flange portion 26 to the GWB 18 over the vertical wall surface beneath the bottom sill. End caps 30 are fitted in the open ends of the rectangular tube formed by the sill projection 24 and in the open ends of the molding profile portion 28.

The bottom sill finish material described with reference to FIGS. 1-4 provides an attractive appearance, similar to that of a wood sill, but is less inexpensive to manufacture and install than a wood sill.

An alternative form of the bottom sill finish material is shown in FIG. 5. In this case, the finish material is in two parts, namely a sill extrusion of synthetic polymer material and a molding profile extrusion. The sill extrusion has a return portion 32, a sill projection 34 and a lower ledge 36. The molding profile extrusion 38 is attached to the sill extrusion by gluing to the lower ledge 36. This allows the same sill extrusion to be used with different molding profiles.

It may be desired to provide a so-called full wrap around the window, with a molding profile that matches the bottom sill molding profile. In accordance with another aspect of the invention, this may be accomplished using the finish material 42 shown in FIG. 6. The finish material 42

shown in FIG. 6 is a one piece extrusion of synthetic polymer material and has a return portion 44, a flange 46 and a molding profile portion 48. Along the interior surface 50 of the return portion 44, the finish material 42 has ribs 52
5 defining guideways 56.

The finish material 42 is used in conjunction with elongate strips 60 of molded synthetic polymer material. Each strip 60 has a flat base 64 and pointed pins or projections 68. The base 64 is sized to fit in one of the
10 guideways 56. Different strips have pins 68 of different height, as shown in FIG. 6. Typically, the pins of the different strips are 1/16", 1/8", 3/16" and 1/4" in height.

In order to install the finish material 42, the installer cuts the material to length so that it will fit
15 snugly between the bottom and top sills of the window opening. The installer uses a carpenter's level to determine whether the sides of the window opening are vertical and, if not, gauge the error over the height of the window opening. Having gauged the departure of the side of the window opening
20 from vertical, the installer selects the strip material whose pins are equal in height to, or one size greater in height than, the error and installs lengths of the strip material in the guideways 56. The installer applies spray adhesive to the interior surface 50 of the return portion 44 and fits the
25 length of material 42, with the strips 60 in the guideways 56, against the side of the window opening. When the material 42 has been positioned against the side of the opening, the installer places a straight edge against the finish material 42 and taps the upper or lower end of the
30 straight edge to force the straight edge, and hence the material 42, to vertical, causing the pins 68 to penetrate the GWB. Since the pins are 68 slender, a pin that strikes a nail will be deflected or break off, and will not interfere with the material 42 being brought to vertical.

35 The spray adhesive, which is applied liberally to the interior surface 50 of the return portion 44 and to the strips 60 in the guideways, has good gap filling properties, and therefore when the adhesive has cured, the adhesive

serves not only to bond the finish material to the GWB wrap 20 but also to support the finish material even though parts are spaced from the GWB wrap.

In similar fashion, the finish material shown in FIG. 6 is used to finish the top of the window opening. As shown in FIG. 7, the upper ends of the molding profile of the side wrap and the ends of the molding profile of the top wrap are finished using molded inserts 72, having prongs 74 that fit in the open ends of the molding profiles 48. The inserts 72 may be rosettes, as shown, or they may be molded to simulate mitered joints between the top wrap and the side wraps. Naturally, it would be possible to miter the ends of the side wraps and top wrap, instead of installing the molded inserts 72, but this is a more labor intensive operation.

As shown in FIG. 1, in the event that a side wrap is used, the extension of the sill projection 24 beyond the sides of the window opening should be at least as great as the width of the molding profile 48 of the side wrap.

The finish materials described above are cheap to manufacture and can be installed quickly and cheaply, without use of nails or power tools. Use of these finish materials avoids the need to install corner beading at the transitions between the vertical wall and the return surfaces bounding the window opening. Further, use of the finish materials permits relatively rough work in installing the GWB 20. Accordingly, the finish materials described above provide a more attractive and more durable finish than the standard drywall wrap without a significant increase in cost.

As indicated previously, the bottom sill finish material may be used without using the finish material 42 to finish the sides and top of the window opening. In the event that the finish material 42 is not used, it may be desirable to modify the configuration of the cut at the ends of the bottom sill finish material in accordance with the profile of the beading used at the transition between the GWB 20 at the sides of window opening and the GWB 18 over the interior surface of the wall. Specifically, the angular cut shown in FIG. 3 would be suitable in the event a corner bead was used,

but an arcuate cut would be preferred in the event a bullnose bead were used.

The preferred synthetic polymer material for manufacture of the extrusions shown in the drawings is polyvinyl chloride (PVC). This material can be cut relatively easily using a utility knife or shears, but is nevertheless tough and durable. The extrusions can be given a desired surface finish before installation or they can alternatively be painted in place.

It will be appreciated that the invention is not restricted to the particular embodiment that has been described, and that variations may be made therein without departing from the scope of the invention as defined in the appended claims and equivalents thereof. For example, in the event that a minor departure from vertical or horizontal in the side or top sill could be tolerated, the finish material 42 could be installed without the strips 60. Further, a modified form of the finish material 42 could be fabricated without the ribs 52.

Claims

1. A bottom sill finish material for a window opening which is formed in a vertical wall and has an interior wrap of gypsum wallboard, said finish material being made of synthetic polymer material and having a return portion which extends into the window opening, a sill projection which extends from the return portion beyond the vertical wall, and a molding profile portion which extends downward from the sill projection, substantially perpendicular to the return portion.

2. A bottom sill finish material according to claim 1, wherein the return portion, the sill projection and the molding profile portion are portions of a one-piece extrusion.

3. A bottom sill finish material according to claim 1, wherein the return portion and the sill projection are portions of a one-piece extrusion and the molding profile portion is a foam core material adhesively bonded to the extrusion.

4. A finish material for a window opening which is formed in a vertical wall and has an interior wrap of gypsum wallboard, said finish material comprising an extrusion of synthetic polymer material, the extrusion having a return portion which extends into the window opening and a molding profile portion which is integral with the return portion and extends from the return portion over the vertical wall.

5. A finish material according to claim 4, further comprising at least one shim element attached to the return portion at its back side, the shim element having a plurality of pins which project from the return portion to penetrate the gypsum wallboard at least partially when the finish material is installed.

6. A finish material according to claim 5, wherein the shim element is removably attached to the return portion of the extrusion, whereby the shim element can be removed and replaced with a different shim element.

5

7. A finish material according to claim 6, wherein the extrusion profile has at least two ribs projecting from the return portion and defining a guideway therebetween and the shim element is a strip-form element fitted in the guideway.

10

8. A method of finishing a window opening in a vertical wall, the wall having an interior surface of gypsum wallboard and the window opening having an interior wrap of gypsum wallboard and having a bottom sill, the method comprising:

15

providing a length of bottom sill finish material made of synthetic polymer material and having a return portion, a sill projection which extends from the return portion, and a molding profile portion which extends from the sill projection, substantially perpendicular to the return portion,

20

placing the bottom sill finish material in the window opening so that the return portion extends into the window opening and contacts the bottom sill of the window opening, the sill projection extends from the return portion beyond the vertical wall, and the molding profile portion extends downward from the sill projection in contact with the interior surface of the wall.

25

9. A method according to claim 8, further comprising:

30

providing a length of side finish material, the side finish material having an extrusion of synthetic polymer material, the extrusion having a return portion and a molding profile portion which is integral with the return portion and extends from the return portion, and

35

placing the side finish material so that the return portion extends into the window opening and is in contact with the side wrap of the window opening and the molding

profile portion is in contact with the interior surface of the vertical wall.

10. A method according to claim 9, wherein the side
5 finish material includes at least one shim element attached to the return portion at its back side, the shim element having a plurality of pins which project from the return portion to penetrate the gypsum wallboard of the side wrap at least partially when the finish material is installed.

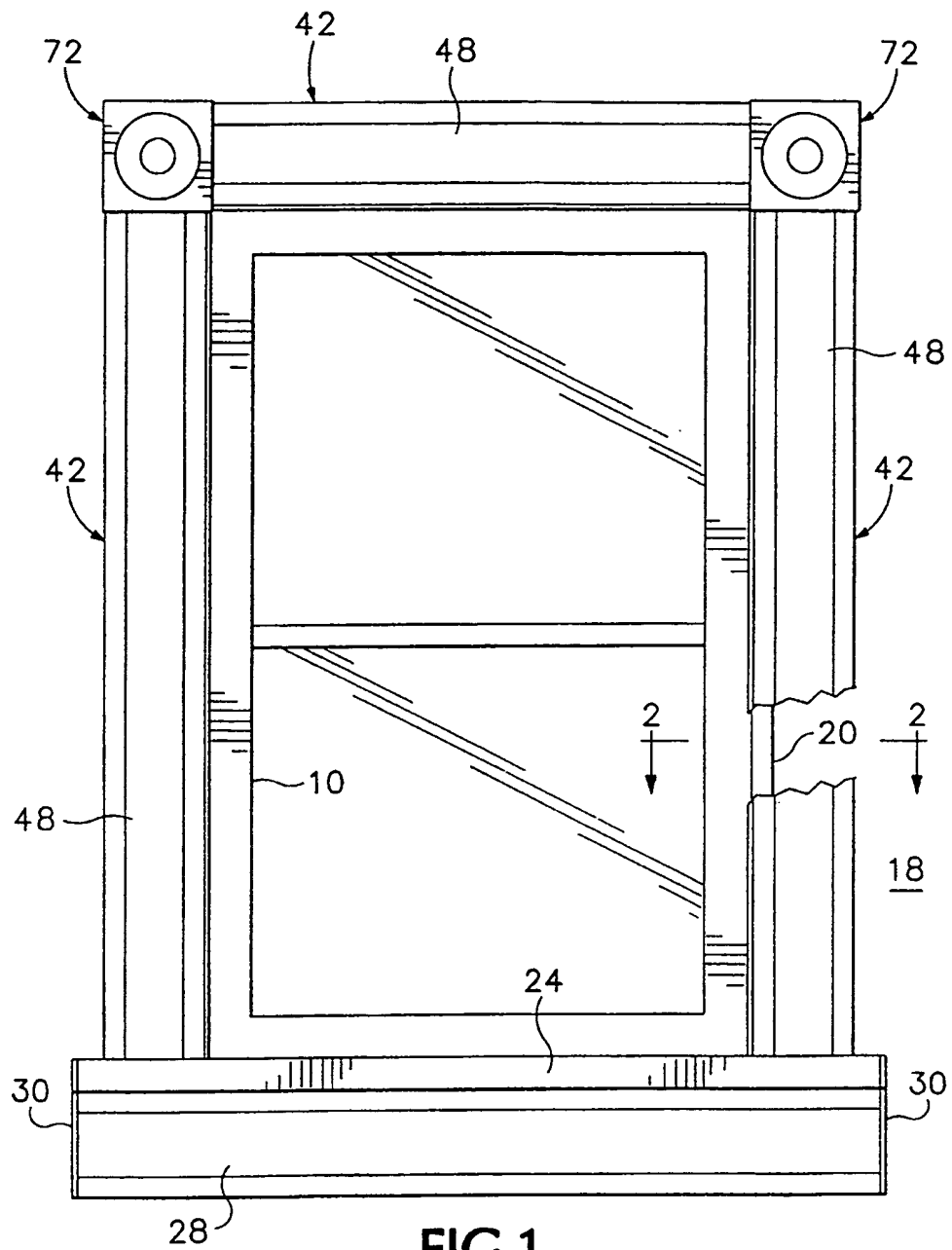
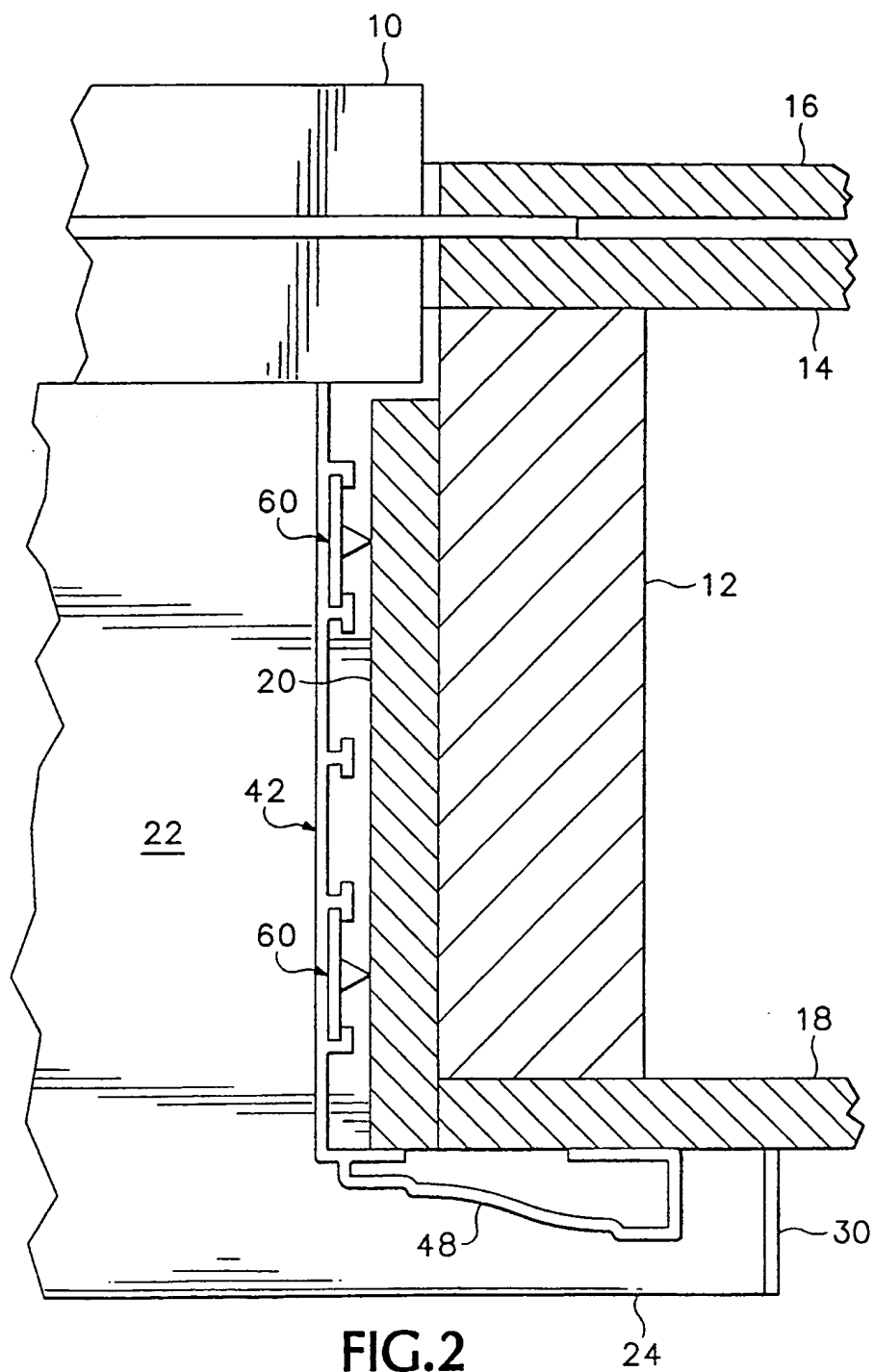
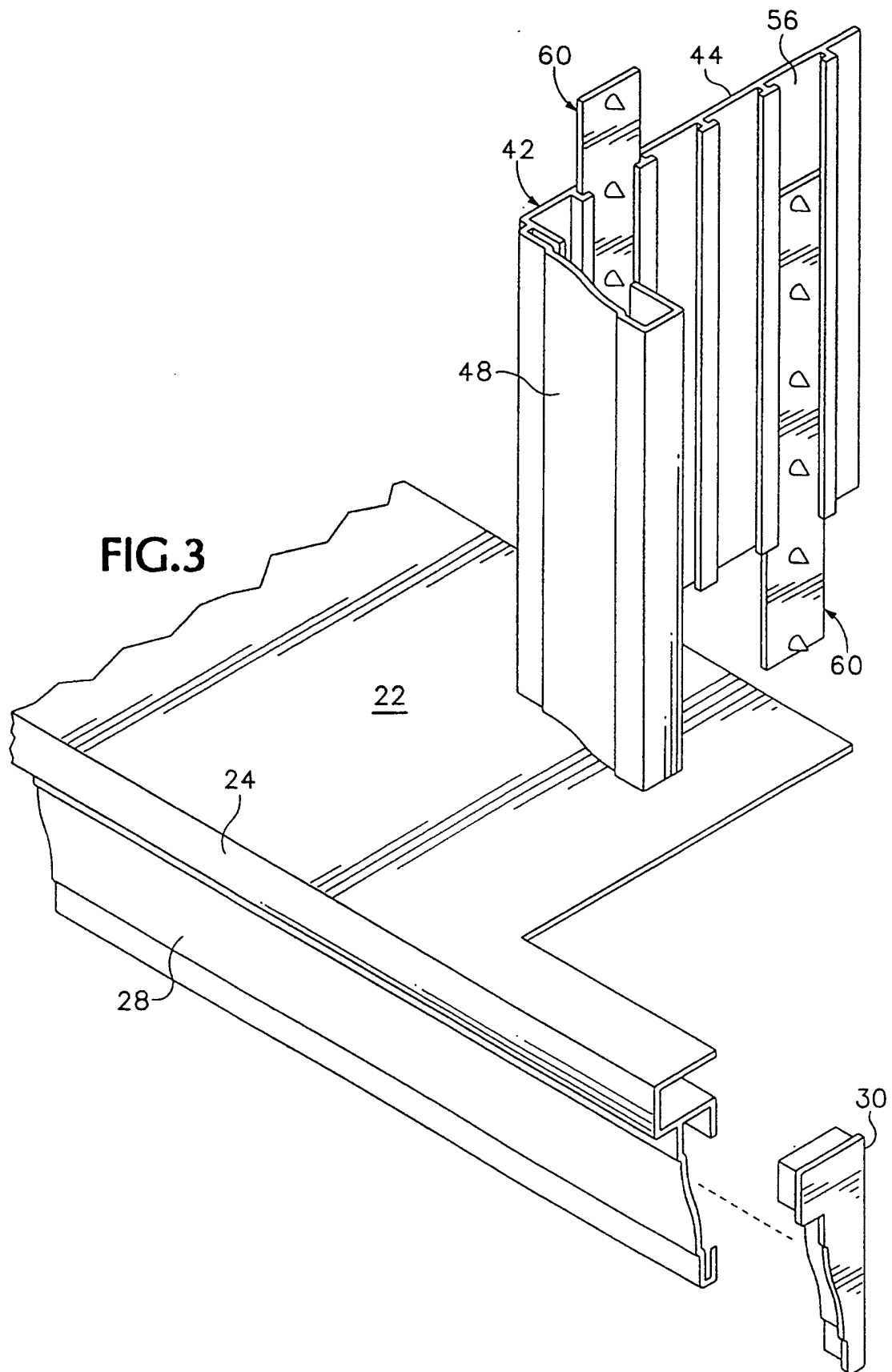
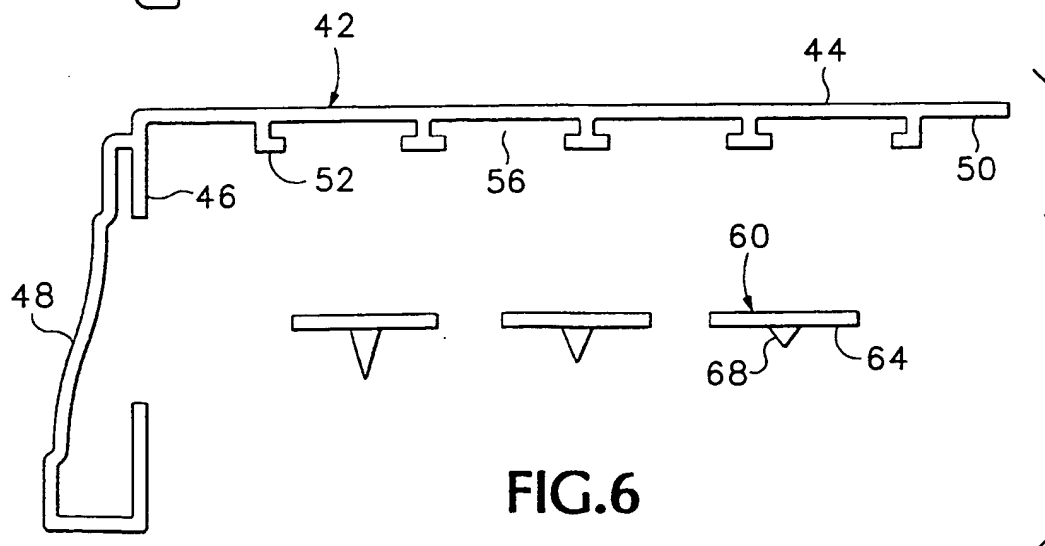
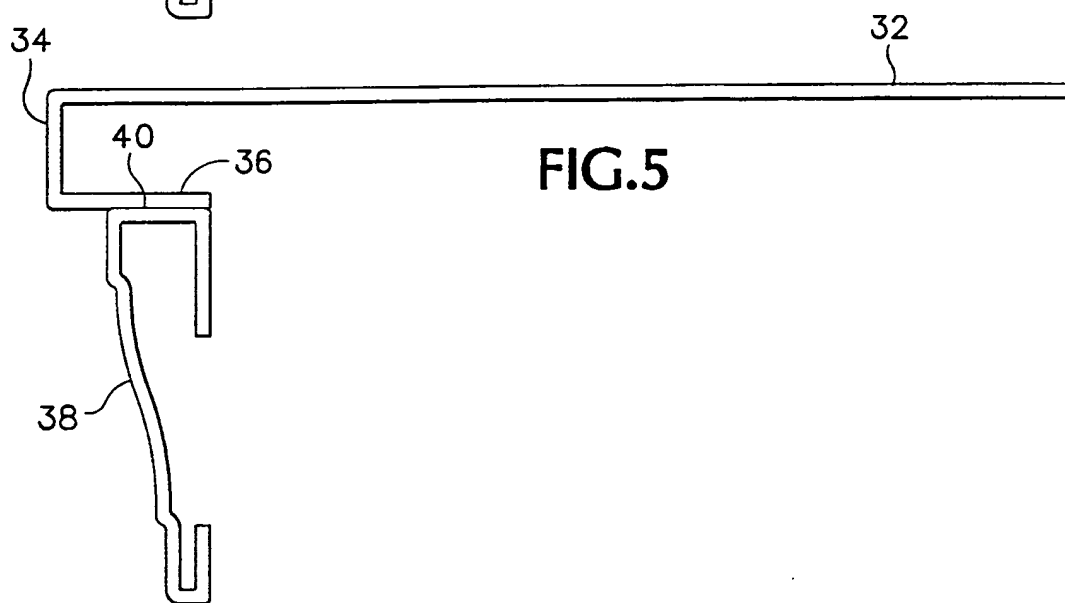
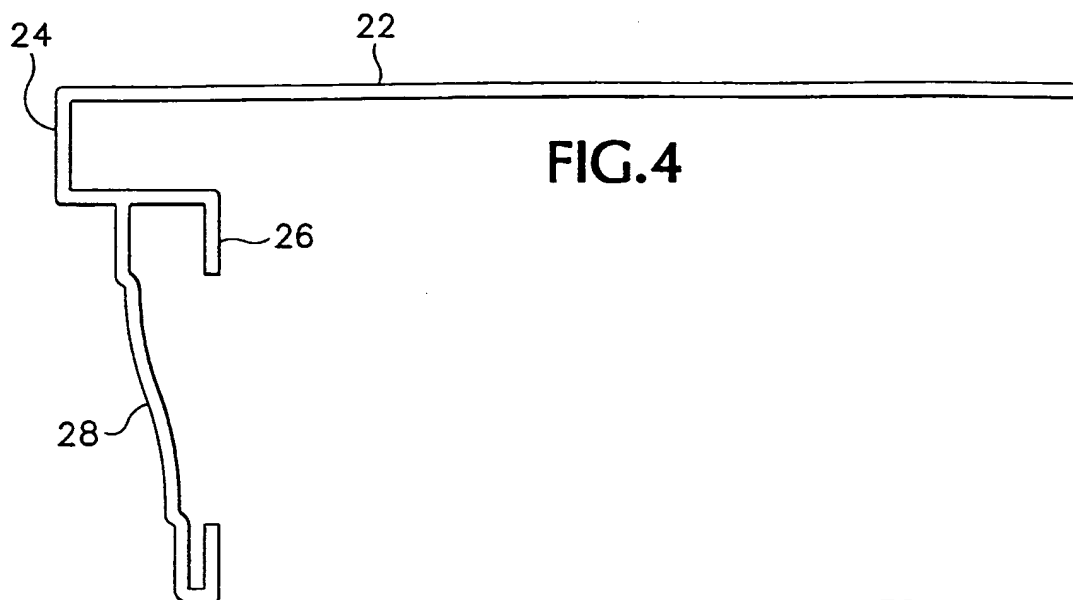
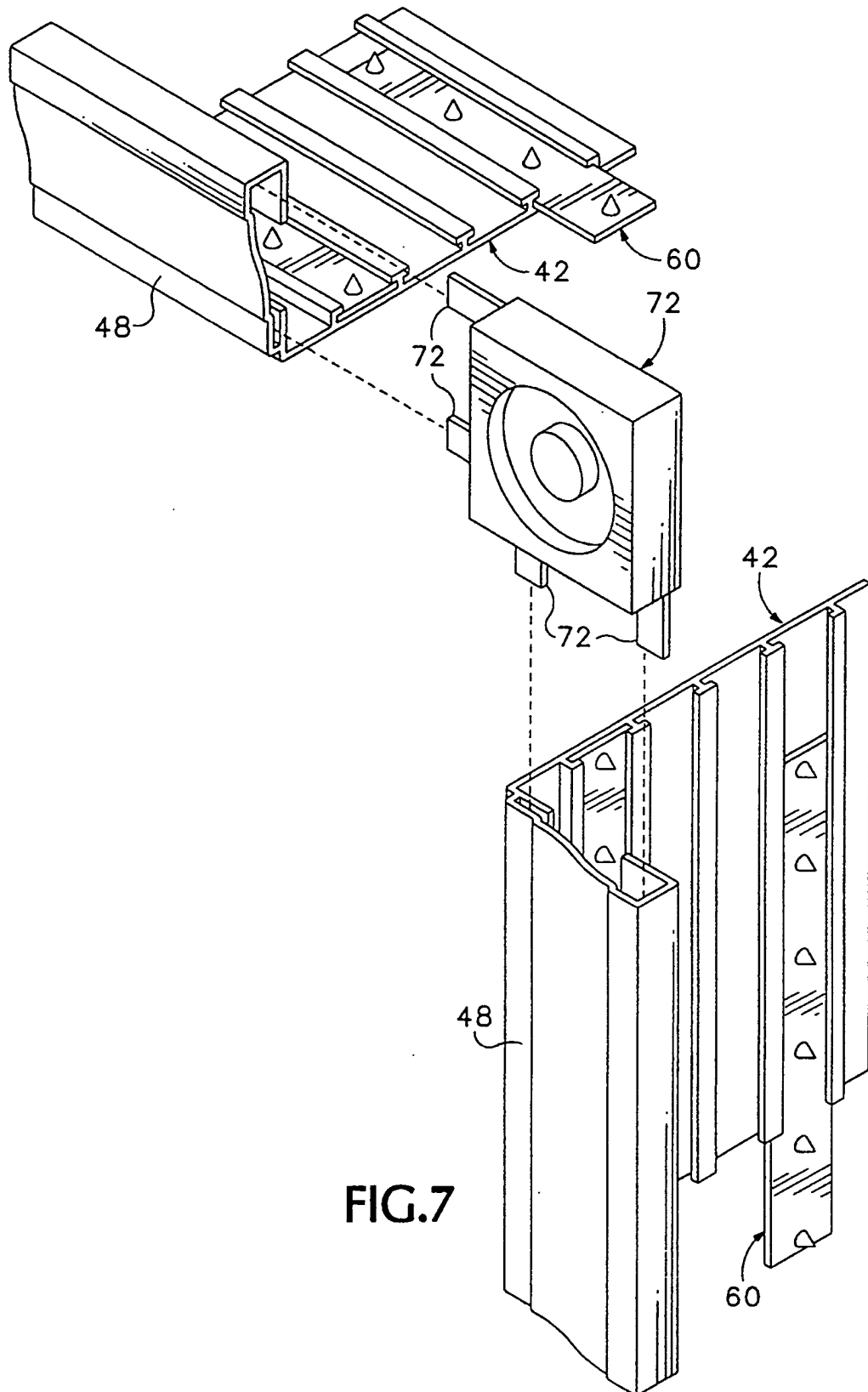


FIG.1



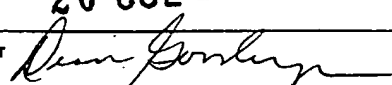






INTERNATIONAL SEARCH REPORT

 International application No.
 PCT/US00/04199

A. CLASSIFICATION OF SUBJECT MATTER IPC(7) :E06B 7/12 US CL :52/211, 212, 656.2, 656.9, 717.01 According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S. : 52/211, 212, 656.2, 656.9, 717.01 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X --- A	US 4,272,931 A (STANIZZO) 16 June 1981 (16.06.81), see the entire document.	1-4, 8, 9 ----- 5, 6, 10		
A	US 1,150,790 A (SWANSON) 17 August 1915 (17.08.15), figure 3.	1, 8		
A	US 3,139,703 A (HILT) 07 July 1964 (07.04.64), figure 3.	1, 8		
A	US 3,449,873 A (DAMATO ET AL.) 17 June 1969 (17.06.69), figures 17-19.	1, 8		
A	US 3,478,478 A (LUEBS) 18 November 1969 (18.11.69), column 1, lines 23-43.	1, 8		
A	US 4, 389, 824 A (ANDERSON) 28 June 1983 (28.06.83), figure 8.	1, 8		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.				
<table border="0"> <tr> <td> * Special categories of cited documents: *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed </td> <td> *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art *Z* document member of the same patent family </td> </tr> </table>			* Special categories of cited documents: *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art *Z* document member of the same patent family
* Special categories of cited documents: *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art *Z* document member of the same patent family			
Date of the actual completion of the international search 05 MAY 2000		Date of mailing of the international search report 20 JUL 2000		
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230		Authorized officer  RICHARD E. CHILCOT, JR. Telephone No. (703) 305-4716		

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/04199

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4,492,062 A (LEVENEZ) 08 January 1985 (08.01.85), figure 6.	1, 8
A	US 5,018,325 A (GEEN ET AL.) 28 May 1991 (28.05.91), figure 4.	1, 8
A	US 5,022,204 A (ANDERSON) 11 June 1991 (11.06.91), figure 10.	1, 8
A	US 5,651,222 A (BRIDGES ET AL.) 29 July 1997 (29.07.97), figures 6-8.	1, 8
A	DE 2,856,401 A (GRUBER) 03 July 1980 (03.07.80), figure 4.	1, 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/04199

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.